Notebook Series -- Pocket Notebooks
Notebook, PN-18-10-31

This pocket notebook is a continuation of PN-18-09-10.2. The one dated entry is from October 1918. The book was used by Edison for experiments on sound detection devices to locate enemy submarines. The experiments were discontinued after the signing of the Armistice on November 11, 1918. Among the employees mentioned in the book are experimenters Isidor (Jerry) Chesler, Newman H. Holland, and Frederick P. Ott. The front and back covers are both marked "War 2." The pages are unnumbered. Approximately 30 pages have been used.

Oct 31 1918

Resonator $5\frac{1}{4}$ inch Resonator of Brass closed at top & cut with 2 inch hole & opening for insertion of brass listening tube with soft rubber tube & pinion with ear piece. Tuned to fundamental of C 256. I heard it unmistakably at a distance of $52\frac{1}{4}$ inches measured from center of Resr to End of Whistle, = Length Column of air $14\frac{1}{2}$ inches —

I noticed that on pinching the Gasholder tube that the sound didnt appear to die quickly & it didnt start at once,

Couldnt find any other tone the jar is too loud for the 7th.

This is High water mark

The $5\frac{1}{4}$ Rsr with 5/8 hole is very much weaker only hear to 28 inches.

When the 2" glass tubes were all tuned to a 4th & arranged for proper phase balance.
Limit of hearing 35 inches when Tank float of gasometer is way up near to 44 inches

When tried a single tube heard it to 34 inches. Tank way up, only gain by this expmt may be that can hear several overtones But volume is not apparantly gained by multiple acting —

Try all 4 in multiple. & get limit, now untune 3 & see if limit is the same,

Then tune on to the fundamental of tune & get limit.
2 ones the 4th the other 2 out

3 See if glass tubes are exactly 2" inside dia

4 = Tune the 4 tubes (2") sharply to determine the unmistakable limit each separately. Then multiple are all & listen for limit. to see surely if there is no gain

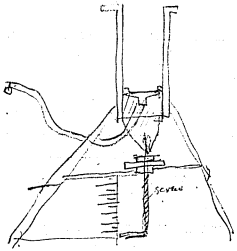
5 = Multiple are the 5¼ with a 2" tuned for a 4th & see after determining the limit of the Big Res if the limit is increased or diminished by now Connecting the 2" Res, both mouths on a level.

6 Tried 8-4 use all brass listening tubes using Rubber joints see if limits improved

C5

Notice with all top open that end of listening tube is maximum 1/2 way up whereas with 5/8 hole it can be placed anywhere even within 1/8 inch of bottom or just under brass plate at the top

The 2" brass Rec 8 inch range



that it is just as good apparently as the glass ones with 5/8 hole, when tested with 2" top entirely open. It gave the fundamental a 5 3/4 on index. ~~Brought it back to 3 3/4 back it up. Index not in right position~~ OK —

By using listening tube passed into tube at top had to 37 3/4 and by listening to Diaphragm got it to 40 ± so there is very little difference.

1 Lay a plate over diaphm close fit + see limit for top.

2 put top plate on top with 5/8 hole get limits with plate over diaphm + without by listening at top. Then remove plate + get limit listening to Diaphm with top on

With brass 2" + dead open top Cannot find only lone from C except 5 3/4 mah (uncorrected?)

Note very important end of listening tube fit ear suction tight, slightest leak makes enormous changes in Volume

Improve it by a soft yielding material on tit so not go into ear, so far + will be tight with slightest pressure.

Think taper tube preferable - prevent hole just near ear + tapered up to Rec opening to cur in Column to 3/8 — possibly 1/2 + of 1/32 brass

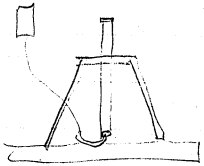
Make 16" long 1 1/2 dia glass tube ring on top to place a top plate on + have 1/2 hole in center + hole for listening tube also another plate with 3/8 hole another with 1/4 hole

Can lay plate on this

Put a cork in bottom with the water filling tube + index,

Use thickest glass can get.

Set the pipe in a wooden plant + see index can be seen



If Hayes in Music room as other Mohitlers get them of different notes find out if Mfrs make for different notes —

Bring C right over a Res & find out nodes by moving in around top —

Try 1 7th in tube 1 ear & 1 fundamentals 15½ in ~~multiple~~ to tube for other Ear & see if as loud as 2 fundamentals or 2 7ths —

Bring the 4" tube down Jerry used may be wrong are not getting fundamental & it needs 28½ inches —

If a diaphm in top of Bug 5½ tube .002 mica 1 5/16 & see if Can find fundamental dia to used in top,
or get a piece 2½ mica .002 & lay over top & wax it around Edges — & get Limit after best Turning

Bring the big 10" down & Tune to C & see Limit

I found my finger closing end of C volutte Chu Cut of Drum very sharply, tried big 5 1/7 with this —

Ept shows 1 fundamental & 1 7th — Concluded

I cannot. nearly as qualition as 2 of 7th to one Ear — Evidently the long Column detracts from the short. — This probably get worse when 5 1/7 Res is put on multiple with the 2" lined to 7th — Try it

Use 2" glass Open wide on top side of fundamental C isn't at 12 1/2 inches or around there it should be for 256 or if books means only the Condensations Count then around 6 inches which it doesn't.

I guess in fact sure they mean Condensation Complete waves length is about 48 @ 50 inches & this dont check up but if 24 @ 25" be length of Condensation then everything checks up fairly well —

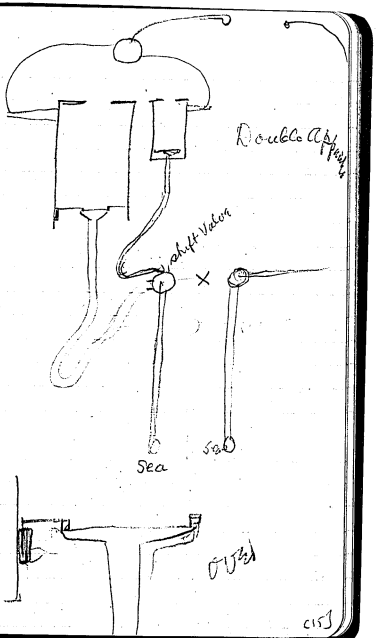
Put a long pipe 3/4 in front C tube & Connect the Diaphm with End of Diaphm tube see if Tube responds OK when adjusted to 5 3/4 — get Limit —

Get a big prong 12 to 18" long weighing many lbs & a felt hammer & Keep it vibrating & see if Can adjust for the fundamental & overtones —

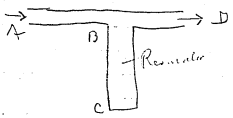
Burns make a Conical Res

2" at top 5" at bottom
18 inches long - closed at
bottom with gauge glass
Use closed top with 1/2 rings
one 3/4 dia 1 1" dia -

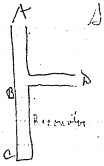
Send Note of C Ilvin diaphram
Close the hole on top &
insert lilening tube, see if
Can find the 1 yr & on
Brass 2" Res, of Cant,
get rings old 4" pattern Dia
Hadfield to get fundamental
see 10 bars dia -

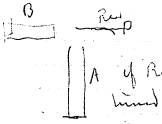


possibly 2 listening tubes in ~~each~~ one Resonator will double the loudness using both ears of 20 it will render it unnecessary to have stereophonic Resonators for the 2 ears. Try it.



Sound entering A Resonator BC absorbs the all, a noise is heard at D



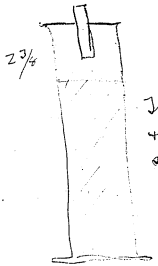


If Reed is going + A is tuned to it the bringing of B also tuned will while A merely muffled

Rayleigh says to get the greatest intensive effect the Neck of a bottle Resonator should be elongated to get the pitch + not change the mass body

Say body should be so small or possible but this I feel intuitively

Try this.



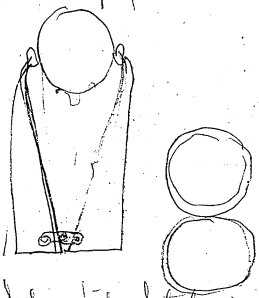
Turn for
2 3/8 7/16

Then put on tube
& tune for with
use of dropper

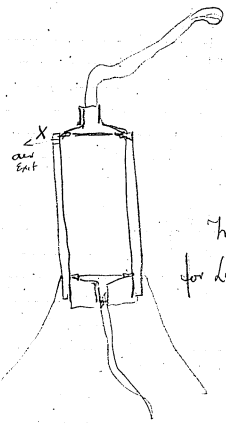
If glass 2" jars are really
2 1/4" inside dia hole
should be 13/16 to give
same echo area as the
Big 5 1/4 Resonator
which is so sensitive – try
87 1/10 Echo surface.

If is the Echo surface that
does the big then a tube
closed with 2 dropper
should be good.
Can prove this by the 2"
oz/mca + the hollow
phone Dropper to listen to

Stethoscope for Diaphragm



Inverted listening tubes, hotel ear fitting accurately ear piece and 3/4 or 1" separate diaphragm to get full amplitude in each ear + not exhaust it.



Try this for limit

Possibly whole range from 200 to 2000 v.s sec
Can be got in short tube - if friction is small & X leak plugged when put sub

Tuning forks. Number of vibs independent of width of prong —
Rate varies inversely as sqrt to square of the length

I should say that to clear & build up volume by means of a porker a Resonator, that it should be very wide in relation to its length
This would absorb all the energy collected over several seconds
Correspondingly record higher accelerations

Prof. Kah
1500 for
1900 second

When testing big Res
5/4 test all the different listening tubes to determine which is best listener,
go by distance,

Also ascertain by distance how important a close fit of a piston must be

Cut the reads apart or if Fred can arrange it slide them so can see how many is ok on big resonator

Have Werner record these equivalents & knowing seconds
Seccots — shell — dips such
Thickth very — Tough
fear signals flock
of F G H, get rate per second

Find a tuning fork, rather
~~[illegible]~~ should have
a Magnet & vibrator & battery
[illegible] as resonator
& use in place of
Red pipe & galvanometer

The Cubran used Manganous
Sulphate & not
Manganic sulphate as
I told him to

Manganic Sulfate is
Red, Red grass
~~[illegible]~~ green
Make

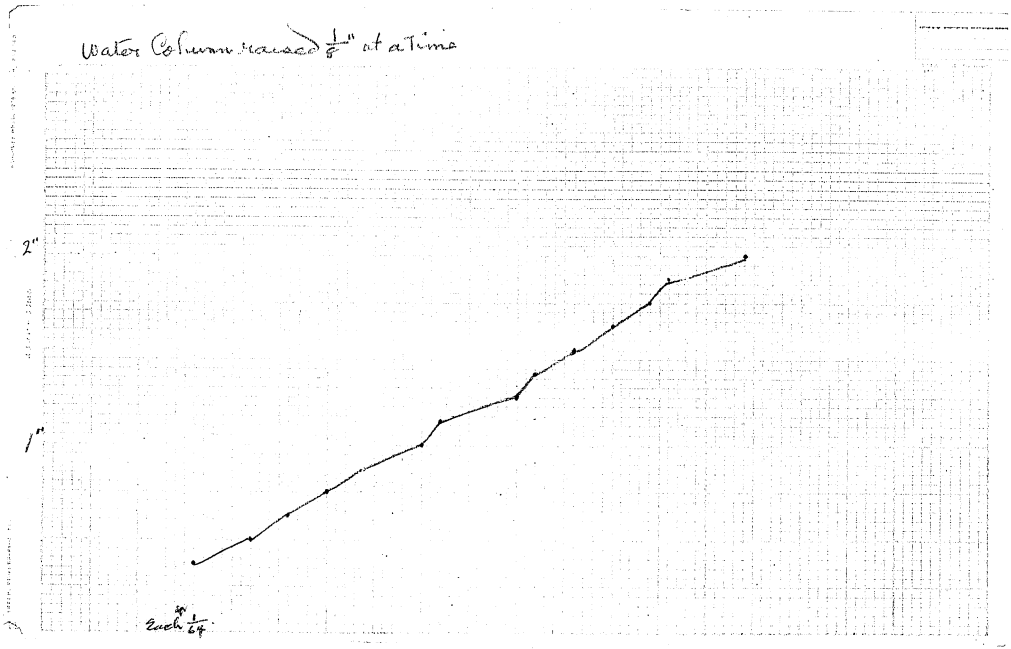
Only 3 Manganates known
Calcium, Ba, K & Ca -
insoluble in solution but
K dissolves them somewhat
decomp to permanganate &
Manganic oxide -

~~Manganate K~~

Make in various ways
Ferric hydroxide -
ditto with 20% other
oxides to act Catalysis

Try tuning for a his.
Exciting air from pipe -
a continuous & intermittent
scratch on a wheel -
hitting dull things with
a soft hammer

[ITEM(S) FOUND IN BOOK]



Holland's fork probably has no overtones

Adjust a Resonator to its fundamental & then to its 7th or so we get an overtone – if we get a 7th then is the Resonator not the fork

The $3\frac{3}{8}$ jar – Just thus the 6'

Holland's fork as source sound

Opening	Length Column cm
$1\frac{1}{4}$	$2\frac{1}{4}$
1	1 3/4
3/4	1 1/4
5/8	1
1/2	3/4
3/8	1/2

weak after that

It weakens after 1"

$2\frac{1}{4}$ 1000 cc Column 2" to 7th

2" Pyrex plume bottom both 5/8 hole 2 7/8

Evidently small the dia of tube the longer the column with same opening

Brass tube Column 1 1/4 hole
7th is 4 3/4 — Hold 2"
full size Column 5 7/8 -

Volume apparently no
greater after 5 7/8 but may
be a little, [illegible] 5/8
gets weaker & weaker

With a 4" Mechanical Resonator
following O.K.

128 Vib/sec	7th is	3.680"
256 "	"	1.880
512 "	"	.980
1024	Prime	3.150
2048	"	1.575

Varying 1/16 @ 1/32.

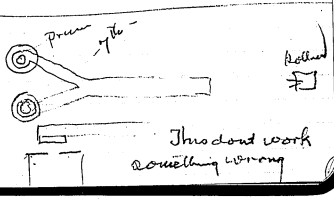
decreasing opening shortens
Column | this probably directly
in proportion.

With 6" Res

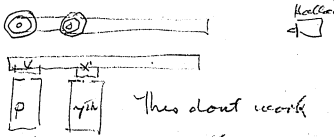
Opening	Column	Difference
1.25"	2.25	.50
1.00"	1 75	25 mistake, 3 given 25
0.75 -	1 25	50
0.50	75	

Run this over on 2" 2 5/16 - 3 5/8 - 6"
Resonators.

Also try holes out center



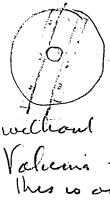
This does work
something wrong



This dont work

Either prime + 7th

Dont work simply when either X or X' closed but when jar is taken away the lead —



Can shave hole over nearly to Edge without demonstrating

Valueis —

This is an 2 5/16 1000 cc jar well try it on 6" Battery jar —

Brass tube Diaphr — placing sheet paper over 2" open top to act as diaphr dont find any place 1/8" Column to 8" Eveddulley - dia at each end of a Column of air dont work

With a 002 ~~Mica dia~~ I get it ~~at~~ 1 3/8 — ~~but~~ Everything is very much weaker than when open

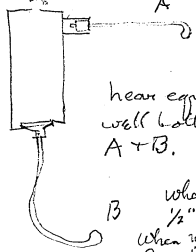
With 002 Mica dia Becomes on Cant find any place on Brass tube

Brass tube

3/4 inch hole

5/8

A



heat equally
well both Ends -
A + B.

B

When 5/8 is made
1/2" it is stronger
When made 1 1/2
B is stronger A very
much weaker

Hollow fork 2 7/8 for 7/16

With the 3 3/8 jar - Hollow fork
Camera shutter & index
Height with Water on Cohesion -

2"	1 5/32
1 7/8	1 1/32
1 3/4 -	1 "
1 5/8	15/16
1 1/2	7/8
1 3/8	13/16
1 1/4	25/32
1 1/8	21/32
1 "	5/8
7/8	17/32
3/4	15/32
5/8	13/32
1/2	11/32
3/8	1/4

poor

127 Kuch in pack
124
889 H
254
127
15129 Scraped

35
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175
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1225

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12250
2879
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